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August 6, 2015

Mr. Jason Berkner
Project Manager
Regulatory Division
US Army Corps of Engineers
P.O. Box 6898, 2204 3rd St.
JBER, Alaska 99506
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Dear Mr. Berkner:

We appreciate the opportunity to review and comment on the Impact Summary Table on behalf of the Native Village of Tyonek. Please find attached our general comments, along with specific comments on each section. These comments were prepared by Ridolfi Environmental and by Dr. Tom King.

Please feel free to contact me regarding these comments by email at kendall@narf.org, or by phone on my direct line at (907) 257-0505. Thank you again for the opportunity to comment, and we look forward to reviewing the next stages of the SEIS process.

Yours sincerely,

/s/

Heather Kendall Miller
Native American Rights Fund

cc: Kathy Tung, AECOM
Gary Reimer, AECOM

Attachment

General Comments

To the extent that the Impact Summary Table represents the scope, content, and language of the actual EIS, it gives cause for considerable alarm. The approach appears to be atomizing rather than comprehensive; in other words, rather than considering the potentially affected environment as a whole, the EIS apparently will break it up into many more or less mutually exclusive parts (Geology and physiography, wetlands, etc.), with little or no treatment of interactions among these arbitrarily defined elements. This will obscure and obfuscate the potential impacts of the project, and burden the reader with such a plethora of uncoordinated data that he or she will find it very difficult to understand the character of the environment or the nature of potential impacts. This approach is inconsistent with the regulatory direction at 40 CFR 1500.2(a) and 1500.4(b) that EISs be “analytic rather than encyclopedic.” It is also inconsistent with 40 CFR 1502.6, that EISs be prepared “using an interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts” (emphasis added). The approach suggested by the Summary Table is at best multi-disciplinary, not interdisciplinary, and shows no evidence of any effort to integrate the perspectives of the various specialists, to say nothing of the affected community.

Moreover, the language of the Table tends to be dismissive of impacts; we are repeatedly told that impacts “will be low,” or “can be mitigated.” This strongly suggests a pro-project bias on the part of the analysts – a bias that is easily exercised when the environment is parceled up into non-interacting parts and the traditional ecological knowledge of those most directly affected (the people of Tyonek Village) is excluded from discussion.

It was our understanding that the analysts were tasked with preparing an objective examination of impacts on behalf of the Corps of Engineers and the public. This table is so laden with unsubstantiated assurances that impacts will be small, nonexistent, or easily mitigated that it suggests an analysis designed to give the project a clean bill of environmental health, regardless of reality.

The Impact Summary Table is made up of short statements of “fact,” without supporting documentation. Of course, to some extent this is inevitable in a tabular presentation, but it leaves us to wonder about whether or not the table represents the most current proposed project alternatives and their likely impacts. This precludes a thorough review and limits the scope and depth of specific comments.

Many of the statements and conclusions in this Impacts Summary Table are not well supported with baseline data or relevant quantitative information. Many of the statements seem to be opinions or assumptions that understate or don’t adequately address the potential impacts. In some cases, the statements and conclusions appear to be premature, since they rely on studies and documents that are in the process of being conducted and further developed.

We understand that three types of impacts – Cultural Resources, Environmental Justice, and Human Health – will not be addressed in the PDSEIS. These impacts – which should be analyzed in a coordinated manner, not as mutually isolated entities -- are of special importance to NVT. We consider it premature to release a document for review that does not address them, particularly since the results should influence the approaches taken and conclusions reached in other sections. Failure to address these impact categories in an appropriately interdisciplinary, consultative and coordinated manner will seriously jeopardize the integrity of the PDSEIS and compromise its utility as a document on which the Corps can make decisions. We strongly suggest that study of these impact categories be fully and properly completed before the PDSEIS is released. They must receive the same level of review as the rest of the PDSEIS.

Specific Comments

The first three columns from the Impacts Summary Table are copied below, and below each Resource section a row has been added to contain our review comments.

Resource	Impacts to be Analyzed in the SEIS	Alternative 2 – Proposed Action Impact Summary
PHYSICAL ENVIRONMENT		
3.1 Geology and Physiography	<ul style="list-style-type: none"> • Bedrock and surface geology • Mineral resources • Physiography • Paleontological resources 	<p>Direct impacts at the mine site during construction, operations, and closure would range from low intensity (e.g., areas of minor grading) to high intensity (ground disturbances and reshaping of landforms by blasting, excavation, and fill). These activities would result in the permanent alteration of about 244 MT of coal resources from a 5,394 acre mining location. Additional alteration of surface landforms would occur in the support areas, the dock, and transportation corridor. Total area impacted by the mine would be approximately 6,175 acres. Known paleontological resources are common and are unlikely to be of moderate to high value.</p> <p>Minimal mitigation is possible given the purpose and need of the project.</p>

Resource	Impacts to be Analyzed in the SEIS	Alternative 2 – Proposed Action Impact Summary
<p>Comments: The impacts to these resources are understated. The subsurface geology and physiography at the mine will be permanently altered. These impacts will also permanently alter the hydrology. The scope of these alterations is many times more than 244 MT. Intensive land use and the types of disturbance caused by surface coal mining will result in landscape-scale impacts that cannot be adequately mitigated.</p> <p>From an indigenous viewpoint and indeed in the context of any comprehensive view of the environment, geology and physiography cannot be separated from the rest of nature, including its sociocultural aspects. The geology and physiography are fundamental to the cultural, spiritual qualities of the environment; altering them will have irremediable sociocultural impacts.</p>		
3.2 Soils	<ul style="list-style-type: none"> • Soil types • Permafrost • Erosion • Soil quality/contaminated soils 	<p>Similar impacts as 3.1. No permafrost impacts. Erosion impacts can be mitigated. (Mitigation will be explained and evaluated in the PDSEIS.) Soil quality can be restored/maintained using standard industry methods—methods will be specified in the PDSEIS.</p>
<p>Comments: The impacts to soil resources are understated. Soil types in the mine area include complex organic and mineral soils that have taken thousands of years to develop. These soil types cannot be artificially recreated; therefore, this resource will be lost, together with the biotic communities it supports and the human activities and values associated with them.</p> <p>Peat soils contribute to the unique water chemistry in this watershed. The loss of this water chemistry may have impacts to anadromous fish migration patterns, which are of key sociocultural importance to the people of Tyonek. Peat soils should be called out specifically in the table, and the impacts related to loss of peat bogs and habitats should be assessed.</p> <p>The evaluation of environmental impacts must include a comprehensive discussion of the relationship between short-term impacts and the maintenance and enhancement of long-term productivity, as well as any irreversible or irretrievable commitments of resources that would be involved in the proposed project should it be implemented. The loss of these important soil types, structures, and functions should be considered as an irreversible and irretrievable commitment of resources.</p> <p>The table states that there will be no impacts due to permafrost. On what information is this statement based? Southcentral Alaska is known to be underlain by isolated masses of permafrost. Does permafrost exist or have the potential to exist in the mine area? More information needs to be provided.</p>		
3.3 Geohazards	<ul style="list-style-type: none"> • Seismicity (earthquakes/faults) 	<p>Impacts from geohazards to the mine, and amplification of impacts of geohazards from the</p>

Resource	Impacts to be Analyzed in the SEIS	Alternative 2 – Proposed Action Impact Summary
and Seismic Conditions	<ul style="list-style-type: none"> •) • Tsunamis • Volcanic activity • Sea ice • Slope stability • Permafrost 	mine, are low, temporary, localized, and affect common resources. Mine does not present extraordinary risk or amplification to damages that might occur from Geohazards to the area. Risks are manageable with proper response plans.
<p>Comments: The potential hazards from earthquakes and tsunamis should be identified and recognized, impacts should be anticipated and analyzed, and mitigation measures should be identified.</p> <p>The potential for catastrophic landslides to occur in the area that are related to blasting and undermining of documented or potential landslide and erosion hazard areas from construction and mining activities should be assessed.</p>		

3.4 Surface Water Hydrology and Water Quality	<ul style="list-style-type: none"> • Recharge to and flow in springs/streams • Post reclamation full recovery to pre-mining conditions • Sediment loading • Changes in stream temperatures • Water quality impacts from overburden/coal sequences, coal dust, fuel/chemical spills 	<p>Direct impacts would occur to removed water bodies, including the complete removal of streams with habitat for anadromous fish species from mine pit footprint.</p> <p>Stream baseflow reduction, sedimentation, water quality, and coal/road dust impacts would be impacted. Recharge to and from springs and stream would be changed.</p> <p>Stream would not be fully restored to former conditions; however, it can be restored to conditions resembling a natural flowing stream. Habitat cannot be restored to prior condition, but is likely to be restored to similar conditions.</p> <p>Fuel chemical spills risks can be controlled/mitigated.</p>
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Comments: This section is laden with unsubstantiated statements obviously designed to minimize the perception of impacts. It is ludicrous to propose that hydrology and its related habitats, having been totally destroyed, can somehow be put back together in a manner “similar” to their natural state. Although new streams may be created that from an outsider’s perspective physically mimic streams destroyed by mining activities, it is at best very unlikely that the interrelationships between groundwater and surface water that currently exist in the complex glaciofluvial sediments and bedrock could be restored to conditions that resemble a natural system. It is also unlikely that the habitat that supports existing biotic communities can be restored to the same degree of functionality. Finally, it is to the existing hydrology and habitats that the people of Tyonek and their cultural systems have adapted over millennia; the analysis appears to ignore altogether how they will be impacted by the removal of the natural environment and its (hypothetical) replacement with something man-made. The impact should be described based on the intensive disturbance and removal of natural systems that will occur during mining, without pretending that this impact can be easily mitigated.

Hyporheic and floodplain connections are critical to functional aquatic habitats for anadromous and resident fish species as well as other aquatic and terrestrial species. The specific impacts related to a disconnected hyporheic zones and floodplains should be specifically assessed.

Impacts to resident fish, amphibians, aquatic invertebrates, and aquatic vegetation should be thoroughly and adequately analyzed and assessed. Inconsistent as it is with the analysts’ fragmenting, atomizing approach to the environment, that environment’s cultural characteristics and significance must also be factored in. Water and the plants and animals it supports, notably but by no means exclusively salmon, are central to the lifeways and belief systems of the Tubughna people. Relationships between the physical environment and the sociocultural values of the people should be included in the analysis.

The evaluation of environmental impacts should include a comprehensive discussion of the relationship between short-term impacts and the maintenance and enhancement of long-term productivity, as well as any irreversible or irretrievable commitments of resources which would be involved in the proposed project should it be implemented. The loss of important surface water hydrology and functions including water quality should be considered as an irreversible and irretrievable commitment of resources.

3.5 Groundwater Hydrology and Water Quality	<ul style="list-style-type: none"> • Changes in groundwater levels that could affect recharge and discharge relationships with surface water • Groundwater quality changes that could affect surface water quality • Subsurface hydrostratigraphy and structure that changes the existing groundwater flow system 	<p>Groundwater system will be changed from present due to removal/replacement of subsurface structures. Surface water quality may be impacted slightly, especially on the timing and volume of recharge from subsurface. Locations of springs and recharge may change significantly.</p> <p>Groundwater flow will not be fully restored to former conditions; however, it can be restored to conditions resembling a natural system with careful structuring and management of fill. Changes to the groundwater flow regime may impact surface water. However, the differences in the end result may not be obviously apparent or relevant.</p> <p>Note: We recognize that other authors have reached different conclusions. We have fully considered their rationale and our current efforts are to make sure independent conclusions are presented logically and completely.</p>
<p>Comments: Segmenting the analysis of groundwater hydrology from surface water hydrology is a classic example of how this EIS seems designed to obfuscate impacts and befuddle the reader. Surface water and groundwater are obviously linked, and should be discussed together. By ignoring the obvious relationships between surface and groundwater, the analysts downplay potential project impacts on both, while confusing the reader with redundant, indeed reiterative, but separate discussions.</p> <p>The impacts to groundwater systems and surface water systems should be described more accurately, and their relationships explored. These resources will be destroyed and removed in the mining areas. Springs and sources of recharge will be permanently removed. Natural groundwater flow will not be restored in the foreseeable future, and it is not possible to restore groundwater flow to conditions resembling a natural system, since the complex glaciofluvial sediments will be removed, and this system cannot be replicated. The differences in pre-mining and post-mining conditions will be significant and relevant with respect to the ecology of the area and the Chuitna watershed, and hence to traditional cultural use and valuation of the watershed.</p> <p>See the comment above related to the hyporheic zone and floodplain habitat. Additionally, the loss of peat from the system will alter the unique water chemistry that has been characteristic of this watershed which in turn may negatively impact migration patterns of</p>		

anadromous fish species. The specific impacts related to a disconnected hyporheic zone and floodplain should be specifically assessed.

The evaluation of environmental impacts should include a comprehensive discussion of the relationship between short-term impacts and the maintenance and enhancement of long-term productivity, as well as any irreversible or irretrievable commitments of resources that would be involved in the proposed project should it be implemented. The loss of this important groundwater hydrology and hydrologic and water quality functions should be considered as an irreversible and irretrievable commitment of resources with significant impacts on natural and human systems.

**3.6
Oceanography**

- Pollutants introduced into Cook Inlet
- Contamination of water from fuel spills
- Changes in water depth and general circulation; tides and water levels; nearshore currents and circulation; and ice forces
- Increases in turbidity and suspended solids
- Changes to physical oceanography of Cook Inlet

Minimal pollutant discharge to Cook inlet barring infrequent accidents. Coal dust may impact inlet; however, natural coal discharge from eroding coal seams is already significant.

Likelihood of a fuel spill from marine traffic is minimal based on frequency of such events over the last 20 years.

Likely localized changes in water depth and general circulation; near shore currents and circulation; and ice forces. Changes are not mitigatable, but unlikely to be important.

Comments: Oceanography is a scientific specialization, not an aspect of the environment. By assigning this title to what is really part of the affected environment, the analysts both segment it from other environmental variables and underrate its importance. The question is not whether the project will impact the study of ocean systems (that is, oceanography) but whether it will impact ocean systems as parts of the environment. As usual, the intimate linkages between ocean systems and terrestrial ecosystems is ignored.

The analysts appear to excuse the potential for impacts from coal dust by noting that coal is eroding naturally into the water; this is another example of the special pleadings on behalf of the project that permeate this table. The nature and frequency of accidents that would result

in release of pollutants should be predicted and described. Natural discharge of coal from eroding coal seams is unusual, and specific conditions that cause this phenomenon in this area should be described. The nature and quantities of coal being naturally discharged should be provided.

What is the basis for the claim that the likelihood of fuel spills is minimal? Qualitative and quantitative data on spills from marine traffic should be provided, together with the logical basis for concluding that impacts are unlikely.

The effect of structures and vessel traffic in the nearshore areas should be described.

Spills and failures related to the diesel fuel pipeline and associated storage tanks on the nearshore bulkhead island should be included in the assessment.

The bulkhead island and other in-water- and overwater- structures may alter coastal geomorphological processes. Impacts related to altered drift cells, sediment transport, and other geomorphological processes should be assessed. Coastal geomorphological processes are important to nearshore habitat for many aquatic species. The table should not state that changes related to water circulation and currents are unimportant.

Impacts to water quality from coal dust, spills, and conveyor belt failure over marine waters should be assessed.

3.7 Air Quality	<ul style="list-style-type: none"> • Criteria pollutants • Hazardous air pollutants • Air quality related values 	<p>Low in intensity given the low level of additional emissions and existing low background levels. It is not anticipated that this project would contribute to an exceedance of NAAQS.</p> <p>The duration of effects would be long term but would return to pre-activity levels at some time after the completion of the project.</p> <p>Mitigation of low level impacts is difficult to infeasible.</p>
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Comments:

Impacts related to coal dust, blasting, windblown spoils, and vehicle emissions should be assessed for all habitats including freshwater, marine, riparian, and terrestrial.

The blithe assurance that effects will diminish "at some time" is insulting to the Tyonek people

who live in the area at ALL times. What will be the duration of air quality impacts, and how will they be experienced by those who actually breathe the air of the watershed? How will the longevity of impacts relate to the likely lifespans of those who will experience them?

3.8 Climate Change	<ul style="list-style-type: none"> • Direct GHG impacts from the project • Indirect GHG emissions from energy generated offsite, but purchased • Indirect GHG emissions from sources not directly controlled by the project proponent, but related activities • Indirect GHG effects related to permafrost and consideration of carbon cycling dynamics such as the loss of carbon sinks • Indirect GHG effects related to coal markets and coal burning 	<p>Direct GHG emissions (releases at site) would have negligible impacts.</p> <p>Indirect GHG emissions from the generation of electricity, heat, or steam generated offsite would also have negligible impacts, given Beluga power plant is gas fired, efficient, and already operational.</p> <p>Indirect GHG emissions from sources not owned or directly controlled by the proponent, such as vendor supply chains, delivery services, outsourced activities, production of construction materials, and employee travel. Examples might be commercial air traffic bringing employees to Tyonek each week for work. These impacts would also be low.</p> <p>None of these impacts would be mitigated, or require mitigation.</p> <p>The project area lacks permafrost but other carbon cycling dynamics are being evaluated.</p> <p>Impacts of coal mining and sale would have negligible impacts on world climate, given elasticity of coal sources and users. At this stage of analysis it strongly appears that Chuitna Coal would displace other coal rather than constitute additional coal consumption. However, the end use issue is still being evaluated.</p>
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Comments: Here again, the impression conveyed is one of dismissal. In view of recent national and international actions and policy statements concerning climate change, this “business as usual” bias – while predictable if coming from a representative of the applicant – is unacceptable in an ostensibly objective analysis.

The emissions from mining and material handling operations should be quantified. The carbon emissions from burning the coal should be quantified. Claims of negligible impacts should be supported by quantitative and qualitative data on emissions and comparison to baseline conditions. Indirect GHG emissions due to the operation of the proposed mine and coal handling facilities should be quantified to assess the impact. The feasibility of mitigation measures should be considered based on the specific impacts and mitigation measures that are available. The release of methane gas from the coal seams during mining should be quantified and included in the inventory of GHG emissions for the proposed project.

The statement that “impacts of coal mining and sale would have negligible impact on world climate” should be substantiated with accurate information. The global supply and demand for coal might not support the indication that “elasticity” governs the current market. The assumption that Chuitna coal would displace other coal, and not be in addition to other coal produced and burned, should be verified to adequately assess this impact. The climate impacts of transporting Chuitna coal to world markets should be accurately assessed.

The table includes indirect GHG effects related to permafrost. In Section 3.2 it is stated that no impacts from permafrost will occur. This should be clarified and explained further.

The removal of forested and vegetated areas should be included in the analysis for the loss of carbon sinks.

3.9 Noise	<p>Construction Noise:</p> <ul style="list-style-type: none"> • Underwater/airborne noise during pile driving in marine nearshore • Airborne/groundborne vibration • Haul truck road traffic and aircraft noise <p>Operation Noise:</p> <ul style="list-style-type: none"> • Coal crushing facility • Mine blasting • Conveyor and 	<p>Construction would have temporary medium to high intensity noise impacts to transitory noise receptors within 1.68 miles. Temporary medium to high intensity noise impacts residential receptors at the Three Mile Creek subdivision and low to medium intensity noise impacts at the Village of Tyonek during for the duration of pile driving activity.</p> <p>Surface mining and concurrent reclamation and coal crushing operations would generate long-term continuous medium to high intensity noise impacts to transitory noise receptors within 6 miles. Blasting would generate long-term</p>
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	<p>access/haul road</p> <ul style="list-style-type: none"> • Transmission line corona • Marine onshore/offshore facilities • Coal carrier vessel traffic • Housing area/airstrip/aircraft 	<p>intermittent brief noise events of high intensity for up to 20 miles.</p> <p>The overland conveyor would generate long-term continuous low to moderate intensity noise impacts to transitory receptors within 200 feet. The airstrip would generate long-term intermittent and brief medium to high intensity noise impacts to residential noise receptors at the worker housing area and to transitory noise receptors within 5 miles.</p> <p>The port facilities would generate long-term continuous medium to high intensity noise impacts to residential noise receptors on Beluga Way, and at the Three Mile Creek subdivision and Tyonek Village.</p> <p>Impacts probably could not be effectively mitigated.</p>
<p>Comments:</p> <p>Noise related to marine vessels should be included as it may have impacts to marine mammals and migratory waterfowl and birds such as eagles.</p> <p>Have noise impacts been measured in consultation with the people who will experience the noise? What constitutes a “low” intensity noise to an auditory scientist measuring it in a laboratory may be much more intense in the experience of someone who is used to the quiet of a natural environment.</p>		
<p>3.10 Hazardous Materials, Spill Risk, and Solid Waste</p>	<ul style="list-style-type: none"> • Potential for hazardous materials contamination • Potential for spill risk during transport of fuels and hazardous materials • Impacts associated with waste removal 	<p>Fuel storage and handling, and minimal hazardous materials present on-site. Solid waste to existing landfill.</p> <p>Impacts are not large, and could be mitigated via engineering controls, spill plans, etc.</p>

Comments: Again we are comfortingly assured that "impacts are not large," without supporting data or arguments.

The quantities of fuel and other hazardous materials that will be delivered, used, and disposed should be provided. The anticipated release of fuel and hazardous substances to the environment during mining operations should be provided. The expected generation rates of solid waste, hazardous waste, and liquid waste should be provided. Does the existing landfill have sufficient capacity?

The potential for spills and failures of the diesel fuel pipeline and associated storage tanks on the nearshore bulkhead island should be included in the assessment.

Spills related to marine vessels should be included in the assessment.

Wildfires or fires related to mining activities and spontaneous combustion at coal stockpiles may occur in the area. Impacts related to fire and potential airborne contamination should be included in the assessment.

The assessment should reference the impacts on the whole environment, including its people and cultures, that resulted from the Exxon Valdez spill, and assess the likelihood of similar effects in this case.

BIOLOGICAL ENVIRONMENT			
<p>3.11 Vegetation Status: need disturbance footprint so we can calculate acreage of each vegetation type impacted.</p>	<table border="1"> <tr> <td data-bbox="427 1161 751 1635"> <ul style="list-style-type: none"> • Vegetation removal – including rare or sensitive species • Introduction of non-native invasive species • Environmental contamination • Fugitive dust • Reclamation • Changes in water availability </td><td data-bbox="760 1161 1411 1635"> <p>Direct loss of approximately 6,036 acres of vegetation from clearing. Relatively short and narrow road and minimal coal stockpile reduces vegetation loss. Elevated conveyor reduces vegetation loss in comparison to other design options. Diesel fuel transported via pipeline reduces dust and risk of spills and spread of invasive plants from fuel trucks.</p> </td></tr> </table>	<ul style="list-style-type: none"> • Vegetation removal – including rare or sensitive species • Introduction of non-native invasive species • Environmental contamination • Fugitive dust • Reclamation • Changes in water availability 	<p>Direct loss of approximately 6,036 acres of vegetation from clearing. Relatively short and narrow road and minimal coal stockpile reduces vegetation loss. Elevated conveyor reduces vegetation loss in comparison to other design options. Diesel fuel transported via pipeline reduces dust and risk of spills and spread of invasive plants from fuel trucks.</p>
<ul style="list-style-type: none"> • Vegetation removal – including rare or sensitive species • Introduction of non-native invasive species • Environmental contamination • Fugitive dust • Reclamation • Changes in water availability 	<p>Direct loss of approximately 6,036 acres of vegetation from clearing. Relatively short and narrow road and minimal coal stockpile reduces vegetation loss. Elevated conveyor reduces vegetation loss in comparison to other design options. Diesel fuel transported via pipeline reduces dust and risk of spills and spread of invasive plants from fuel trucks.</p>		

Comments:

Here again, the relationships among vegetation, animal populations, and human beings need to be assessed. Since plant communities are not constrained by property boundaries, the prediction that only 6,036 acres will be disturbed is probably inaccurate and at least needs to be justified. Will the impacts of clearing stop at the edge of the cleared zone? Are there data from anyplace in the world that support such a contention?

Impacts related to control of vegetation along the conveyor belt should be included in the assessment. Is it possible that pesticides be used? If so, their impacts on plants, animals, people, and relationships among them must be considered.

3.12 Wetlands and Waters of the U.S.

Status: need disturbance footprint so we can calculate acreage of each wetland type impacted. Additional delineation was necessary for 1990 alternative to allow functional assessment comparison.

- Direct loss of wetlands and their functions
- Contamination from dust, leaks, or spills
- Indirect loss of wetlands through changes in hydrology.
- Reclamation of wetlands and wetlands hydrology

Direct loss of approximately 2,494 acres of wetlands and other waters of the U.S. and permanent changes in hydrology. We are working to assess the effectiveness of proposed mitigation to restore wetland functions and values.

Smallest acreage of loss due to shorter and narrower road and smaller coal stockpile which also reduces the risk of contamination. Elevated conveyor reduces wetland loss and disruption of wetland hydrology.

Comments:

As usual, the analysts excuse the project's impacts by assuring the reader that only the "smallest" amount of acreage will be lost. In relation to what is 2,500 acres of wetland subject to destruction the "smallest" acreage involved?

The impacts to wetlands and waters of the U.S. are significantly understated. See comments above in Section 3.4 and 3.5.

Impacts to important flyways for migratory waterfowl and other birds should be included in the assessment.

The evaluation of environmental impacts should include a comprehensive discussion of the relationship between short-term impacts and the maintenance and enhancement of long-term productivity, as well as any irreversible or irretrievable commitments of resources that would be involved in the proposed project should it be implemented. The loss of these important wetlands and waters of the U.S. and hydrologic and water quality functions should be considered as an irreversible and irretrievable commitment of resources. Existing wetlands and their plants and wildlife are of critical importance to the traditional subsistence practices, livelihoods, and cultural values of the Tubughna people, and cannot be replaced by new wetlands manufactured to "mitigate" the effects of wetland loss.

As noted, water and hence wetlands are of fundamental cultural importance to the people of Tyonek and other Tubughna people. It is deeply misleading to analyze water and wetland impacts without reference to their cultural qualities.

**3.13 Freshwater
Aquatic
Ecology**

Status: Analysis of impacts not complete – due July 8th.

- Habitat loss or alteration
- Fish passage barriers
- Noise/blasting effects
- Contamination from fuel spills or other unintentional releases
- Water quality degradation
- Coal dust effects
- Effects on aquatic invertebrates
- Reclamation of stream and lake habitat

Direct loss of portions of anadromous streams - 10.6 miles of Stream 2003 and 0.8 miles of a tributary to Stream 2004. Fish spawning and rearing habitat would be unavailable and macro invertebrate and periphyton communities eliminated. High impact to fish and aquatic organisms. Potential indirect loss of lower trophic level productivity experienced in downstream habitats in Stream 2003. During mining, the loss of these habitats would be mitigated on a fish production and use basis by creating or enhancing spawning and rearing habitats outside of the mine area, including lake and stream habitats in the Lake 5 area, Lower Chuitna and Stream 2003-9. Stream protection and restoration plans would be implemented

		<p>and monitored to avoid permanent loss of salmon habitat and production. The potential for greatest impacts is the loss of Stream 2003 habitats above the fish barrier, and the impact of that loss would be wholly dependent on the success of the Fish Protection Plan. We are currently evaluating the effectiveness of the plan to reduce the level of impacts. The PDEIS will describe the expected level of impacts remaining.</p> <p>Access roads cross streams with anadromous and resident fish – culverts and bridge crossings would pose risk for habitat degradation (aggradation, scour, increased sedimentation), and fuel spills—risks which the PDSEIS will evaluate. The elevated conveyor limits the number of stream crossings.</p> <p>The potential for adverse effects from acidification because of coal dust is expected to be small due to operational controls built into the conveyor system and characterization of the coal suggests potential for acid generation is very low.</p>
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Comments:

Segmenting “Freshwater Aquatic Ecology” from such “other” variables as surface and subsurface hydrology and water quality is a transparent effort to bury the actual impacts of this project in a mass of redundant, overlapping, verbiage. It is precisely the kind of “encyclopedic” treatment that the NEPA regulations warn against.

Partly as a result of this “encyclopedic” approach, impacts to freshwater aquatic ecology are significantly understated. Impacts are not restricted to just anadromous fish species. Impacts to aquatic and riparian vegetation, amphibians, aquatic mammals, and other species in the watershed should be included in the assessment. Critically, impacts on the ecological relationships among these species and their habitats must be analyzed, together with the ways in which the people of Tyonek Village relate to and take part in the ecological variables.

Passage at culverts should also consider passage for aquatic mammals and other aquatic animals such as amphibians.

Essential Fish Habitat is a critical component of productive fisheries. Impacts related to Essential Fish Habitat should be thoroughly assessed.

In-water work windows and construction timing related to project sequencing should be provided and included in the assessment.

The evaluation of environmental impacts should include a comprehensive discussion of the relationship between short-term impacts and the maintenance and enhancement of long-term productivity, as well as any irreversible or irretrievable commitments of resources that would be involved in the proposed project should it be implemented. The loss of this important freshwater aquatic ecology and functions should be considered as an irreversible and irretrievable commitment of resources.

3.14 Marine Ecology and Commercial Fisheries

Status: Analysis is in senior review stage.

- Habitat loss or alteration
- Noise effects
- Contamination from fuel spills or other unintentional releases
- Displacement of commercial fishing activities

Construction impacts of the port facility including dredging and filling, pile driving, and accidental release of contaminants would affect marine ecology and commercial fisheries.

Impacts from operation of the port facility are from habitat loss, behavioral disturbance, displacement of commercial fishing, and potential contamination and fuel spills. There would be a permanent loss of approximately 1.5 acres of benthic habitat under filled areas and areas lost to piles that support the trestle and loading facility. Altered current patterns may result in slight modifications of fish movement patterns, which are unlikely to affect fish populations, but may affect harvest patterns in the vicinity of the port facility. Fishermen who presently harvest from the immediate area of the port facility would be displaced. Potential contamination from chemical and fuel spills.

Comments: The impact to commercial, recreational, and particularly subsistence fishers should be described and where relevant and feasible quantified.

The size in acreage related to the nearshore bulkhead island needs to be confirmed. The table says 1.5 acres will be lost. However, the 2011 draft of Chapter 2 says the island will cover 4 acres. Referring to the comments in Section 3.6, impacts to coastal geomorphological processes should be included in the assessment.

The project proposes several thousands of feet of conveyor systems and docks, which are large overwater structures. Impacts related to these extensive overwater structures should be included in the assessment. Additionally, it is unclear if the marine and docking facilities will require periodic maintenance dredging. If maintenance dredging is to occur, the potential impacts should be included in the assessment.

Loss of and impact to Essential Fish Habitat including that for forage fish that are important prey resources for salmonids should be included in the assessment.

In-water work windows and construction timing related to project sequencing should be provided and included in the assessment.

It appears that impacts to subsistence fisheries have not yet been analyzed. This is a key deficiency which must be corrected.

Impacts on sport fisheries appear not to be analyzed in the assessment and should be included.

3.15 Terrestrial Wildlife

Status: Analysis is complete.

- Habitat changes associated with removal, modification or fragmentation
- Behavioral disturbance
- Noise/blasting
- Barriers to movement
- The potential for injury and mortality from interactions with people or equipment
- Contamination from

Direct loss of terrestrial wildlife habitat from clearing. Relatively short and narrow road and minimal coal stockpile reduces habitat loss and fragmentation, elevated conveyor increases risk of bird collisions but reduces habitat fragmentation and risk of altering migration patterns of terrestrial mammals.

	fuel spills or other unintentional releases	
Comments: Many, if not most, of the terrestrial wildlife important economically and culturally to Tyonek people will not live in a mine site. As usual, the analysts minimize the importance of impacts to wildlife. Wildfires or fires related to mining activities and spontaneous combustion at coal stockpiles may occur in the area. Impacts related to fire and potential airborne contamination should be included in the assessment.		
3.16 Marine Mammals <u>Status:</u> Analysis is not complete.	<ul style="list-style-type: none"> • Habitat changes associated with sedimentation, physical changes to benthic habitat, and increased vessel traffic • Potential effects on availability of prey • Behavioral disturbance • Potential for injury/mortality or harassment from noise • Potential for injury and mortality from interactions with people or equipment • Contamination from fuel spills or other unintentional releases 	Direct impacts on harbor seals and harbor porpoise: noise impacts from pile driving during construction of port facility, behavioral disturbance, habitat modification, risk of contamination or injury/mortality from collisions with vessels. Shutdown zones (areas where impact hammer activity would be stopped if observers see marine mammals entering) during pile driving will be necessary to avoid major impacts from exposure to injurious noise levels. Cook Inlet Beluga Whales are covered in the Threatened and Endangered Species section.
Comments: Harbor seals and porpoise are the only marine mammals listed in the table. It should be explained why sea otters, sea lions, killer whales, humpback whales, and other marine mammal species would not be expected to be in this area of Cook Inlet and be impacted by the proposed project. All marine mammals should be listed in the table and included in the		

assessment.

Marine vessels and shipping traffic should be included in the assessment.

In-water work windows and construction timing related to project sequencing should be provided and included in the assessment.

**3.17
Threatened and
Endangered
Species**

Status: Analysis is complete for birds, but not for belugas.

- The potential for injury and mortality from collisions with ships
- Contamination from oil or fuel spills from ships
- Habitat changes associated with sedimentation, physical changes to benthic habitat, and increased vessel traffic
- Potential effects on availability of prey
- Behavioral disturbance
- Potential for injury/ mortality or harassment from noise
- Contamination from fuel spills or other unintentional releases

Direct impacts on Cook Inlet Beluga whales: noise impacts from pile driving during construction of port facility.

Shutdown zones (areas where impact hammer activity would be stopped if observers see marine mammals entering) will be necessary to avoid major impacts from exposure to injurious noise levels from pile driving. We are currently analyzing acoustic data from several studies to determine an accurate area for the shutdown zones. Effects on critical habitat could be reduced by avoiding ensonifying it when whales are present which could be as much as between April 15 and October 15.

Negligible impact on short-tailed albatross or Steller's eider from collisions or spills due to rarity of both bird species in the project area.

Comments:

Noise impacts to beluga from operation of the port facility should be assessed, as should noise impacts during construction other than from pile driving.

SOCIAL ENVIRONMENT	
3.18 Land Use, Ownership, Management, and Recreation	<ul style="list-style-type: none"> • Change in land ownership, management, and use • Changes to recreation opportunities, management, and access <p>Construction and operation would result in no change to land ownership and management, but would result in a change of land use from primarily an undeveloped use to an industrial use, which would be beneficial to the Mental Health Trust land owner at the mine site. Land authorizations (easements and leases) are in-place.</p>
<p>Comments: Impacts to tourism and sport fisheries should be included in the assessment and in the cost-benefit analysis for the proposed project.</p> <p>Impacts to current hunting, fishing, and other subsistence uses of the lands, and future suitability and access for those uses, should be addressed.</p> <p>What makes the change from undeveloped to industrial use “beneficial” to the land owner? Is industrial use automatically assumed by the analysts to be “beneficial?” If so, why? What about land owners other than the Mental Health Trust? Effects on land management will not be limited to the mine site, but will be felt in all the surrounding areas where change will occur in plant and animal habitats, in animal behavior, and in the visual and auditory environments</p>	
3.19 Visual Resources	<ul style="list-style-type: none"> • Visual contrast • Scale dominance • Viewer duration • Viewer geometry • Viewer distance <p>Impacts would result from high intensity impacts from strong visual contrast of project components during construction and operation phases. Visual impacts would increase in winter and when viewed from the air.</p> <p>Impacts would be long-term, as sources of visual contrast would continue until Project closure. Impacts would be primarily localized, and would occur in a common context with few sensitive viewers.</p> <p>Visual impacts need to be considered in context of the intent of land owners.</p>

Comments:

Long-term impacts would continue beyond Project closure if the land owners elect to keep structures in place.

Visual impacts need to be considered not only “in context of the intent of land owners,” but with reference to the perceptions of, and in consultation with, the people of Tyonek and other traditional users of the land. It is, after all, THEIR visual environment that will be affected.

The analysis appears to be based on abstract models that do not account for the fact that visual impacts are the products of interaction among the environment and the eyes and brains of people. Impacts must be analyzed in close and careful consultation with the people affected.

3.20**Socioeconomics**

- Creation of jobs
- Labor earnings generated from construction and operation
- Output generated from supporting sectors
- Fiscal impacts to the Kenai Peninsula Borough and State of Alaska

State and regional employment impacts would be low relative to the total labor force; however, employment impacts would be high for Beluga and NVT due to PRC commitment to hire qualified TNC Shareholders and local residents. The magnitude of the effects of project payments to state and local governments would be low and beneficial, while the effects on public infrastructure would be low at all geographic levels, as on-site personnel housing would be largely self-contained and operated and maintained by PRC or third-party contractors. Impacts during the construction phase would be considered temporary in duration, while impacts would be long-term during the operations phase because they would extend for the life of the project. The geographic extent of socioeconomic impacts would vary but occur primarily at the local and regional level.

Comments: The analysis does not actually address socioeconomics; it addresses only economics, in their most dismal form. In order actually to address socioeconomics, the analysis should follow the Interorganizational Guidelines and Standards for Social Impact Assessment (http://www.nmfs.noaa.gov/sfa/social_impact_guide.htm), and the International Principles for Social Impact Assessment issued by the International Association for Impact Assessment

While quantification is useful, the analysts should be mindful of the principle that one should analyze “what counts, not just what is easy to count.” In this case this will require qualitative analysis of the impacts of replacing long-term traditional subsistence jobs with short-term industrial work. Analysis should address not only the direct economic implications of such

replacement, but also its implications for social stability, cultural integrity, nutrition, and mental health.

The long-term costs and benefits of the proposed project should be considered, including the costs associated with the removal and loss of the existing natural resources. The socioeconomic impacts associated with the loss of natural resources should be thoroughly and accurately assessed, and where relevant quantified for comparison to the ostensible economic gain from coal mining. Who will gain and who will lose in terms of economics? In particular, socioeconomic impacts to subsistence hunting and fishing as well as tourism and both commercial and sport fisheries should be assessed.

3.21 Environmental Justice

Status: Analysis of impacts pending completion of Human Health Assessment (HIA) and subsequent Human Health assessment

- Impacts to minority and low income populations (socioeconomics, subsistence, human health)

Developed after HIA is complete.

Comments: Since it is the Native people of Tyonek who will bear the brunt of the project's impacts – which are by definition disproportionate since they will not fall equally on other citizens – this section of the analysis must not be delayed and given short shrift. The analysis must be carried out in direct consultation with the people of Tyonek, and should be informed by the Akwe Kon Guidelines issued under the Convention on Biological Diversity (<https://www.cbd.int/traditional/guidelines.shtml>), as well as by EPA EJ policy and guidelines (c.f. <http://www.epa.gov/oecaerth/environmentaljustice/indigenous/index.html>).

The direct and indirect impacts to indigenous and Native people from the loss of natural resources including water, soil, plants, game, and fish should be assessed. The impacts to the mental and physical wellbeing and cultural integrity of indigenous and Native people and other subsistence users within the community should be included in the assessment.

This section must not be delayed until the Draft SEIS; sufficient time and resources should be allocated to fully incorporate the data and findings of the HIA.

<p>3.22 Cultural Resources</p> <p><u>Status:</u> Analysis of impacts to cultural resources is pending finalization of Project disturbance footprint.</p>	<ul style="list-style-type: none"> • Changes to cultural resources character 	<p>Developed after finalization of Project disturbance footprint.</p>
<p>Comments: What do the analysts understand to comprise “cultural resources?” This is a very ambiguous term. If the term is understood to include “resources” of importance for “cultural” reasons, then the analysis should embrace at least:</p> <ul style="list-style-type: none"> • The cultural values assigned by Tubughna people to the natural terrestrial and aquatic environments, and to specific types of plants and animals; • Traditional uses of the natural environment; • Traditional subsistence practices; • The role of the environment in traditional cultural and spiritual beliefs and practices; • Traditional language and stories, particularly as related to the environment; • Cultural landscapes and seascapes; and • Specific historic and cultural sites, including places of cultural practice. <p>Specific attention must be given to impacts on the traditional cultural landscape of the Ch’u’itnu watershed (which the Native Village of Tyonek has demonstrated is eligible for the National Register of Historic Places (NRHP), and the Ch’u’itnu Archaeological District which it embraces. The Corps must demonstrate compliance with Section 106 of the National Historic Preservation Act with respect to these districts and their associated cultural resources. The significance of these districts derives in part from the uninterrupted practice of salmon subsistence by indigenous and Native people.</p> <p>The short- and long-term impacts to these cultural resources must be assessed, in coordination with analyses of socioeconomic impacts and environmental justice; this analysis should not be delayed.</p> <p>The Corps should either elect to treat the Ch’u’itnu Traditional Cultural Landscape as eligible for the NRHP or expedite the determination of eligibility process, to ensure that impacts to it are fully assessed in the Draft SEIS.</p> <p>The direct and indirect impacts to cultural resources and ways of life from the loss of natural resources including water, soil, plants, game, and fish should be assessed.</p>		

Because of the types of cultural resources present, we suggest that the team working on this portion of the SEIS includes or contracts with someone with expertise in Alaska Native cultural issues, ideally specific expertise in Dena'ina and Upper Cook Inlet Native cultures.

**3.23
Subsistence
and Traditional
Ecological
Knowledge**

- Changes in resource abundance and availability
- Changes in access to resources
- Changes in competition to resources

The direct and indirect effects from construction and operation of the Project on Subsistence and TEK would be low to medium in intensity, with potential high intensity impacts to subsistence salmon fisheries. These impacts take into account changes in resources, access, and competition. Subsistence practices of NVT and Beluga residents have historically relied in part upon resources from the project area. Most animals would leave the immediate vicinity of the project area; however, alternate habitat would likely support subsistence harvests. Impacts to subsistence salmon fisheries within the mine site area would be of low to medium intensity, and salmon production would likely be reduced for a long-term duration in the project area. These impacts would be reduced after restoration and reclamation activities. Salmon are a high productivity and high volume resource composing a larger portion of the subsistence harvest that would be difficult to replace with alternate food sources.

Comments: The fragmenting structure of the analysis allows the analysts to give short shrift to the key issues of subsistence and traditional ecological knowledge. A proper interdisciplinary, non-encyclopedic EIS would examine these issues in relation to “other” aspects of the environment (wetlands, hydrology, plants, animals, cultural resources, etc.). As a result of the document structure adopted, impacts to subsistence resources are understated. See comments above on Sections 3.4, 3.5, 3.13, 3.20, 3.21, and 3.22. This section should acknowledge, as Section 3.13 does, that the extent of the impact to the fishery is heavily dependent on the success of the Fish Protection Plan. The likelihood of success, as well as the impacts in the event of success, partial failure, and complete failure should be quantified and assessed.

It is not clear why impacts to subsistence salmon fisheries within the mine site would only be of low to medium intensity. Even if the Fish Protection Plan and post-mining reclamation are successful, there would be no subsistence fishery within the mine site for the duration of the

project, a high-intensity impact.

This section should also address impacts to subsistence resources other than salmon. In particular, impacts to the habitat and migration patterns of moose and beluga, both important subsistence resources for the people of Tyonek, should be analyzed.

The direct and indirect impacts on the fishery and the people who depend on the fishery for subsistence and commercial livelihoods should be described and addressed. The loss of the ecosystem and natural resources within that part of the watershed encompassed by the project area should be quantified. The impact caused by the loss of hunting areas and plant and medicinal plant gathering areas should also be included in the assessment.

3.24 Human Health

- Socio determinants of health
- Accidents and injuries
- Exposure to potentially hazardous materials
- Food, nutrition, and subsistence activity
- Infectious diseases
- Water and sanitation
- Non-communicable and chronic diseases
- Health services infrastructure and capacity

Developed after HIA is complete.

Comments:

This is another key variable whose study should not be put off until the last minute, or addressed in a vacuum. The mental and physical health effects of losing a treasured natural environment cannot be overestimated, and should be considered as a central part of this EIS. The direct and indirect impacts to indigenous and Native people from the loss of natural resources including water, soil, plants, game, and fish should be assessed in detail, as should the impacts to the mental and physical wellbeing of indigenous and Native people and other subsistence users within the community.

Impacts to human health as a result of bioaccumulation of pollutants in subsistence foods should be assessed.

By no means should this section (if it must remain an isolated section in a cumbersome, encyclopedic EIS) be delayed until the Draft SEIS; sufficient time and resources must be allocated to fully incorporate the data and findings of the HIA.

3.25 Transportation	<ul style="list-style-type: none"> • Impacts to road access • Impacts to air transportation • Impacts to vessel traffic in Cook Inlet 	<p>Construction impacts would generate weekly deliveries of gasoline via tanker truck and daily transport of materials and supplies from the port to mine facilities. Up to 2 daily trips for dust suppression along infrastructure roadways and within the mine with a water tanker during dry periods. Waste disposal would be intermittent based on waste oil use and storage (a maximum monthly frequency). Daily waste disposal would be buried in an on-site fill site for inert material and all remaining solid waste transported to a managed offsite landfill in Beluga. Construction-related air impacts would include frequent air tanker deliveries of aviation fuel for helicopter use and 12 weekly roundtrip charter flights for the transport of personnel. Monthly delivery of fuel and up to 10 deliveries in a week (with average 3 to 5) of materials and supplies by barge during construction.</p> <p>During operation at full mine production, 80 to 160 coal transport vessel trips are expected annually. Monthly delivery of fuel and up to 3 deliveries per week of materials/supplies by barge. A fuel tanker truck would deliver gasoline every 3 to 4 weeks to the mine site along the mine access road. Daily transport of materials/supplies between the port and mine would occur via the haul road. Hazardous waste disposal would be transported via barge monthly and solid waste would be transported to the Beluga landfill three times a week. Nine roundtrip charter flights at peak operation would transport personnel. In the case of inclement weather, personnel would be transported by bus from Beluga.</p>
<p>Comments:</p> <p>The impacts from fugitive dust emissions and GHG emissions should be quantified and assessed.</p> <p>The potential for cumulative impacts from use of the project infrastructure for other activities after project closure should be assessed.</p>		

End of Comments